# Overview of BEAREX08, A Remote Sensing Field Experiment On ET at Field, Multi-Field and Regional Scales Using Measurements and Models.

*Tuesday, November 3, 2009: 10:00 AM*
*Convention Center, Room 326, Third Floor*

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In 2008, scientists from eight federal and state institutions worked together to investigate temporal and spatial variations of the surface energy balance and evapotranspiration (ET) in a semi-arid irrigated and dryland agricultural region in the Texas Panhandle. Micrometeorological fluxes (surface energy balance) were determined in four lysimeter fields (each 5 ha) containing irrigated and dryland cotton and in nearby bare soil, wheat stubble and rangeland fields using 9 eddy covariance stations, 3 large aperture scintillometers, and 3 Bowen ratio stations. Flux and remote sensing aircraft flew transects over the surrounding fields and region encompassing an area contributing fluxes from 10-30 km upwind of the USDA-ARS lysimeter site. Tethered balloon soundings were conducted over the irrigated fields for investigating the effect of advection on local boundary layer development. Local ET was measured using four large weighing lysimeters, while field scale estimates were made by soil water balance with a network of neutron moisture meter profile water sites and from the flux systems. Aircraft and satellite imagery at different spatial and temporal resolutions were obtained. Plot-scale experiments dealing with row orientation and crop height effects on spatial and temporal patterns of soil surface temperature, soil water content, soil heat flux, evaporation from soil in the interrow and plant transpiration were conducted. We will provide an overview of the experiment and discuss the major research objectives. BEAREX08 is perhaps the only large scale field study to date that has measurements of ET at scales ranging from point to regional scale; and that compares direct and indirect methods at local scale with remote sensing based methods and models using aircraft and satellite imagery. Integrating these measurements and model estimates holds promise for deepening our understanding of surface energy balance closure issues and the role of advection on the measurement and modeling of ET.

See more of: Remote Sensing at Multiple Scales: The Bushland Evapotranspiration and Agricultural Remote Sensing Experiment, 2008

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